

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATEN

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 22 July 2004 (22.07.2004)

PCT

(10) International Publication Number WO 2004/061302 A3

(51) International Patent Classification:

F03D 11/04

(74) Agent: BUDDE, SCHOU & OSTENFELD A/S; Vester

(21) International Application Number:

PCT/DK2003/000002

(22) International Filing Date: 6 January 2003 (06.01.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(71) Applicant (for all designated States except US): VESTAS WIND SYSTEMS A/S [DK/DK]; Smed Sørensens Vej 5, DK-6950 Ringkøbing (DK).

(72) Inventor; and

(75) Inventor/Applicant (for US only): NIM, Erik [DK/DK]; Ørnevej 3, DK-7400 Herning (DK).

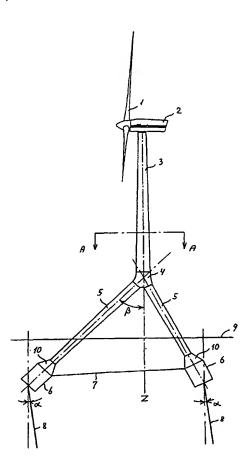
Søgade 10, DK-1601 København (DK).

(81) Designated States (national): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,

[Continued on next page]

(54) Title: WIND TURBINE WITH FLOATING FOUNDATION



(57) Abstract: A floating foundation for wind turbines is disclosed, where the foundation essentially comprises at least three submerged buoyancy bodies connected to the lower end of the tower of the wind turbine at a common node member situated well above the surface of the sea. The buoyancy bodies are connected to the node member by means of relatively thin leg sections, whereby wave load on the foundation is reduced. By applying the foundation according to the present invention, stress concentrations and torques in the node member are reduced, whereby it becomes possible to apply a relatively lightweight and hence cheap node member. The overall weight of the construction is thereby reduced and hence the volume of the buoyancy bodies necessary to counteract the overall weight of the construction.

SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

with international search report

(88) Date of publication of the international search report: 26 August 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No PCT/DK 03/00002

		1017	DK 03/00002		
A. CLASSI IPC 7	IFICATION OF SUBJECT MATTER F03D11/04				
According to	o International Patent Classification (IPC) or to both national classifica	ation and IPC			
	SEARCHED				
Minimum do	ocumentation searched (classification system followed by classification F03D	on symbols)			
	tion searched other than minimum documentation to the extent that so				
	lata base consulted during the International search (name of data bas	:e and, where practical, search ter	ms used)		
C. DOCUME	ENTS CONSIDERED TO BE RELEVANT				
Category °	Citation of document, with indication, where appropriate, of the rele	want passages	Relevant to claim No.		
X Y	EP 1 174 336 A (MAIERFORM MARITIM TECHNOLOGY) 23 January 2002 (2002 figures 1,3,5	1-6, 10-12 7-14			
Υ	DE 101 01 405 A (BRIESE REMMER) 18 July 2002 (2002-07-18) figure 1; examples 1A,1B	7-14			
E	GB 2 378 679 A (BONE DAVID ;OCEAN TECHNOLOGIES LTD (GB)) 19 February 2003 (2003-02-19) figures 1-3 abstract	7,10-12			
		-/			
	The day the continue of hour				
	ner documents are listed in the continuation of box C.	X Patent family members a	re listed in annex.		
"A" docume	tegories of cited documents : ant defining the general state of the art which is not ered to be of particular relevance	T later document published after or priority date and not in con cited to understand the princi invention	iffict with the application but		
"E" earlier document but published on or after the international filling date "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to					
and the second of the second o		"Y" document of particular relevan cannot be considered to invol	en the document is taken alone nce; the claimed invention nva an inventive, step when the		
other m	ant published prior to the International filling date but	document is combined with o	one or more other such docu- ng obvious to a person skilled		
	actual completion of the international search	Date of mailing of the internati			
	August 2003	26 AOUT			
Name and m	nailing address of the ISA	Authorized officer			
	European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,	ANNA D CALOM	A1100011 (21)		
	Fax: (+31-70) 340-3016	ANNA R-SALOMO	UNSSON/EL		

INTERNATIONAL SEARCH REPORT

International Application No PCT/DK 03/00002

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT						
tegory °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.				
	DATABASE WPI Section PQ, Week 200174 Derwent Publications Ltd., London, GB; Class Q55, AN 2001-642504 XP002250517 & JP 2001 248535 A (KAJIMA CORP), 14 September 2001 (2001-09-14) abstract	1-14				

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No PCT/DK 03/00002

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
EP 1174336	A	23-01-2002	DE DE EP	10034847 A1 20100474 U1 1174336 A1	14-02-2002 10-05-2001 23-01-2002
DE 10101405	Α	18-07-2002	DE	10101405 A1	18-07-2002
GB 2378679	A	19-02-2003	NONE		
JP 2001248535	A	14-09-2001	NONE		